

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

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PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)



Date of mailing
(day/month/year) **22 JULY 2005 (22.07.2005)**

Applicant's or agent's file reference

OPP050258KR

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/KR2005/000888

International filing date (day/month/year)

25 MARCH 2005 (25.03.2005)

Priority date(day/month/year)

26 MARCH 2004 (26.03.2004)

International Patent Classification (IPC) or both national classification and IPC

IPC7 C07K 14/435, C12N 15/12

Applicant

POSTECH Foundation et al

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/KR



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**WRITTEN OPINION OF THE
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Box No. 1 Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material
☒ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material
☒ in written format
☒ in computer readable form
 - c. time of filing/furnishing
☒ contained in the international application as filed.
☒ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	2-9, 11-49	YES
	Claims	1, 10	NO
Inventive step (IS)	Claims	2-9, 11-49	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-49	YES
	Claims		NO

2. Citations and explanations :

This present invention relates to a bio-adhesive derived from mussel, and more particularly to a novel *Mytilus galloprovincialis* foot protein-5(MGFP-5) and a recombinant protein that is a hybrid of MGFP-5 and foot protein-1(FP-1).

The following documents have been considered for the purpose of this report:

D1: NCBI Accession No. AAS00463 (Feb. 01, 2004)

D2: US 5202236 (Apr. 13, 1993)

1. Novelty

Claims 1 and 10 describe an MGFP-5 gene and protein. The protein of the present invention are useful in enhancing plant tolerance to cold, salt or drought stress when the protein is overexpressed in the plant. However, document D1 discloses a foot protein-5 from *Mytilus galloprovincialis* which has the same sequence with the present invention. Therefore, the subject-matter of claims 1 and 10 is not considered to be novel under PCT Article 33(2).

2. Inventive Step

D1 provides the same sequence with claims 1 and 10 of the present invention. D2 discloses application of the techniques of recombinant DNA technology to the production of bioadhesives of the type produced by marine animals such as mussels, barnacles and oysters. In this present invention, a recombinant protein that is a hybrid of MGFP-5 and foot protein type 1(FP-1), and a method of producing an adhesive protein is not described in any of the prior art. Therefore, the subject-matter of claims 2-9 and 11-49 is considered to involve an inventive step under PCT Article 33(3).

3. Industrial Applicability

The subject-matter of claims 1-49 is considered to be industrially applicable under PCT Article 33(4).

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Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Claims 2 and 12 do not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined. The term "a peptide for improving a physicochemical property of the adhesive protein" in claims 2 and 12 has no clear signification.